Industrial FINISHING

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Devoted to Product Finishing in the Factory

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Letters from Readers of "Industrial Finishing"

The names and addresses of firms or individuals whose letters and inquiries appear in this department may be had by writing this office, or letters addressed to them in care of this office will be forwarded promptly.—The Editor.

Lacquer Dipping Machines

We notice an inquiry in November INDUSTRIAL FINISHING for lacquer dipping machines (page 4). If there are any manufacturers of these machines, or machines for drying after lacquering, and if you are in possession of their names, we would appreciate very much if you would let us have them, as we are in the market for machines of this nature but have no information as to where they can be obtained.—S. M. Mfg. Co. (Metal Products).

Non-Grain-Raising Stain

We manufacture a line of children's furniture and are looking for a non-grain-raising maple stain (water).—S. Wood Products Co.

Wiping Filler

On page 44 of the October, 1934, issue of INDUSTRIAL FINISHING, we note an article pertaining to patented filler rubbing or wiping materials to replace burlap, sea grass, or excelsior for rubbing or wiping off filler. We are interested in obtaining the names and addresses of the companies manufacturing such filler wipers.—X. Electric Co.

In your publication of INDUSTRIAL FINISHING for the month of October, 1934, you have an article on page 44 entitled "For Rubbing Off Filler." We would appreciate it if you would kindly forward us the name of the manufacturer or manufacturers of this material. — A. B. V. Mfg. Co. (Refrigerators).

Interested in Shellac

In October issue of INDUSTRIAL FINISHING, I notice an interesting article dealing with shellac. I understand previous issues carried articles on the same subject. Would it be possible to obtain copies of these?—S. V. Products Co. (Patternmakers' Supplies, etc.).

Silk Screen Sandblasting

On page 47 of October INDUSTRIAL FINISHING there is an article headed "Silk Screen Sandblasting," wherein someone asks if you have information on a silk-screen method applicable to sandblasting on glass. If you have any information of this sort, we would also appreciate hearing from you, as we are likewise interested in this method. — S. L. Co. (Sandblast Equipment).

EDITOR'S NOTE: A brief answer to this question appears on pages 36 and 38 of this issue.

Venetian Blind Finishing

Some time this year, in one of your issues, there appeared an article in reference to the proper method of finishing the wood slats used in making Venetian blinds. I think it was a dipping process followed by passing the slats through a gasket the shape of the slat itself, which permitted the material to be coated with one operation. Will you kindly send me two copies of the monthly edition that this appeared in?

We take your magazine for our men but inasmuch as these copies have all been sent out of the office,

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and not knowing exactly which one it appeared in, I am taking it up direct with you, thinking I can get quicker action than trying to find one of the old magazines in which this particular article appeared.—K. B. V. (Vice President of Varnish, Paint & Lacquer Mfr.).

EDITOR'S NOTE: An article on this subject appears in this issue, beginning on page 11.

To Color Rubber

I desire to get out something new in the way of a sportsman's vest-pocket rubber . . . What bothers me is the colors I want to put into the rubber (a two-color geometric design), since neither paint nor common ink dyes will work. I could make up a sample if I had suitable color material which would soak in, wear well and remain flexible. The colors preferred are green and a sort of a cream, not entirely white. Colors are important in something to sell for a good price. This item could also have a margin of ½-in. or larger for advertising space of firms desiring to sell them. I would like to be the salesman for any concern wishing to produce such an item.—N. K. J.

Fishskin Flowers

In November issue of INDUSTRIAL FINISHING on page 6, under the title "Flexible Lacquer for Fabrics," we would thank you to write direct to these manufacturers and express our interest in their product. We would like to get their booklet. We intend using this flexible lacquer in connection with fishskin flowers, and any information they can give us in this connection will be greatly appreciated.—J. Mfg. Co.

Quick Dry Sealer

In your October, 1934, issue of INDUSTRIAL FINISHING, on page 50, we note an article about a "New Q. D. Sealer" that interested us. Can you furnish us the name of the manufacturer of this material or give us some helpful information about it?—D. & I. (White Oak Split-bottom Chairs).

Whirling Machine

In your September issue we noticed on page 4, "Letters from Readers," something in reference to a whirling machine; also flexible lac-

quer. Will you kindly give us further information regarding the whirling machine for coating small parts, or give us the name of the manufacturer so we can write them?—G. G. Mfg. Co. (Electric Horns).

Tumble Finishing

We want to learn the technique of tumble painting; that is, tumbling the stock while it is drying. Much of our production requires the painting of small screws, washers, etc. At present we are spraying these parts on cardboards, trays, etc. If you have any information on this process, or can suggest any manufacturers of equipment for doing it, we would be very grateful.—X. Y. Z. Co. (Spark Plugs).

Mechanical Dipping Information

Regarding inquiries for the finishing of small items in wood and metal of all kinds, will say this work can all be done with the Smith Improved Dipping Machine for lacquering and enameling—with materials that dry over night so that thousands of items can be finished at the least possible cost and all the work done and dried in one day, ready for shipment. Complete information on anything in this line will be cheerfully furnished, as well as samples of your own work will be finished without cost.—C. W. Smith, M. E., 40-50 Market Ave., N. W., Grand Rapids, Mich.

Tough Lacquer Wanted

We would be very much obliged to you if you would be kind enough to forward to us a manufacture of lacquer, all colors, which could be applied to waterproofed materials, and still be flexible. This lacquer will stand up under hot and cold water, and temperature changes of all kinds, if it is to be satisfactory for our purpose.—N. N. Q. (Waterproof Materials).

Lacquers Wanted in India

We have been advised by our importing agent that your INDUSTRIAL FINISHING magazine is very instructive and helpful in guiding us to get best materials for our products. We hope you will be kind enough to send

(Continued on page 42)

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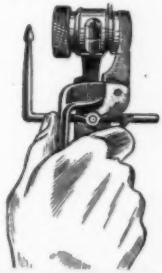

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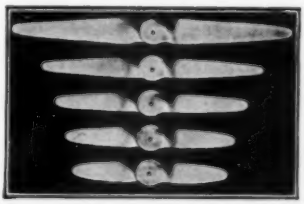

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Notes on Staining Furniture

by Herman Erickson
B. F. Huntley Furniture Co.

STAINING, as we know it today, can date its beginning from the advent of aniline colors, but it is only within the last few years that any notable progress has been made in this important phase of finishing. Even now it is not standardized like other operations in the finishing room, due mostly to lack of dissemination of information on the subject.

Water stains, although possessing three objectionable features —slow drying, raising the grain and loosening veneers—have been most widely used and the most reliable. Since synthetic wood alcohol (methanol) became available, these disadvantages can be overcome to a great extent. Some of the water stain powders will dissolve entirely in methanol; those that will not, can be dissolved in a small quantity of hot water and the methanol added. Perhaps the safest procedure is to make the stain that way.

This solution is best adapted to spraying, which method of application has many advantages over brushing. It is faster, it eliminates laps and brushmarks, and it prevents the stain from taking too dark on soft places in the wood. A regular varnish gun with a fine nozzle or sprayhead is suitable for this work. This stain will dry ready to washcoat in two hours.

Editor's Note — This is author's first article. He is a practical "color man" or finishing technician in the finishing department of a large furniture factory in North Carolina. Comments on what he has written will be welcome.

▼ ▼ ▼ ▼

Formulating Stains

In these times of constantly changing vogues for this or that color or shade of colors, a few words about formulating stains may not be out of place. Many finishers, I believe, sometimes find themselves tangled up in a maze of complicated formulas after changing their stain recipes a number of times to comply with requests for some new variations. This can be avoided by setting up a system for matching colors as follows:

Get a supply of the basic colors in stain powders; for example, two shades of red, a scarlet and a deep red; two shades of yellow, one bright and one leaning toward orange; a good gray black; a blue and perhaps a brown. Make up two or three master formulas for each wood most commonly used, and work them out with the fewest colors possible. Then when a

color comes in to be matched it can be determined, by comparison with the master color nearest to it, what changes will be necessary to make a perfect match.

Give each stain a number and record it in a book for this purpose. In a separate book, where records are kept of the finishing processes of each piece or suite, these stains can be referred to by number instead of writing out the formulas in each instance.

Sanding

I will digress somewhat to emphasize the fact that too much stress cannot be placed on the importance of proper sanding before stain is applied. On the cheapest as well as on the high-priced furniture, sanding is one operation that should not be slighted. A surface well sanded with the correct grade of sandpaper will not present the muddy, spotty appearance of one where the marks from coarse sandpaper are evident. Moreover it is a distinct saving in the finishing room labor, and more so in the amount of material used.

Spraying

The spray booths where staining is done should be well lighted, the light to come from behind and a little above the operator's head. Do not use air pressure so high that it will fog on the stain; 20 to 30-lbs. should be sufficient. If the stain sets up too fast a little glycerine can be added to it. It is my opinion that a washcoat of shellac over the stain is necessary to obtain the best results. It stiffens the fibers and lessens the danger of sanding through the stain.

New Stain Solvent

I have recently tried out a stain solvent which, while it raises the grain somewhat, also contains a solid that is deposited on the surface the same as shellac. It is really a stain and washcoat combined in one operation. It dissolves stain powders the same as water; that is to say, from a specific amount of stain powder a stain of equal strength is obtained from this solvent.

Non-grain-raising Stains

A few words about the "non-grain-raising" stains may not be amiss, since they are being used quite extensively. (But please give us a more convenient name to use for them! Why not "Anhydrous"?). Their advantage of keeping the wood in its original smoothness is indisputable. The resulting colors are also very clear and should be no more susceptible to fading than water stains, as the same basic stain powders are used in making them. The chief difficulty with the ones I have tried is the tendency of certain colors to settle to the bottom of the container. It seems that the vehicle used does not dissolve all the colors equally well.

Many Accidents Caused by Poor Lighting

Improper use of artificial light caused an occupational accident every 46 seconds and a fatal accident every hour in America last year according to D. W. Atwater, of the Westinghouse Lamp Co., and General Secretary of the Illuminating Engineering Society.

Of the 1,269,500 occupational accidents (person gainfully employed at time of accident) recorded for the entire United States last year, 15% were traceable to poor lighting, based on statistics of the National Safety Council. For such conditions to exist . . . . . may be regarded as neglect of available lighting facilities, since many of these accidents are preventable under even average lighting.

Finishing Venetian Blinds

by R. J. Fairburn
Zapon-Brevolite Lacquer Co.

Since Venetian blinds have become so much in demand, manufacturers of these blinds have had to step up production. The one hold-back with many concerns is the finishing process . . . indicated by numerous inquiries about economical equipment for coating the slats, how to handle the freshly coated slats and what materials to use. This article answers many of the questions that come up in connection with finishing Venetian blind slats on modern production basis.

● ● ● ●

SLATS for Venetian blinds are usually made of basswood; occasionally Port Orford cedar is used. They are ⅛-in. thick by 1½ to 2⅜-in. wide. Lengths are from 2 to 16-ft. The surface of this wood is fairly fuzzy, which creates one of the problems encountered in obtaining a good finish. Thinness of the slats allows easy warping — another obstacle to be avoided.

Most users of blinds prefer an eggshell luster, the reason being that a higher luster will create a glare from sunlight; a flatter finish would probably be lacking in wearing qualities and would be harder to keep clean. An eggshell finish diffuses light in just the proper manner. The finish must be tough, durable and resistant to the action of actinic rays from the sun. A good finish will also be impervious to fumes from smoke, gasoline, etc. If the finish is hard, it may also be readily cleaned. In other words, a good Venetian blind finish will combine the good qualities of an outside house paint and an interior wall enamel.

Lacquer Finish

Three distinct types of finish are now being used for this work. Lacquer was probably the first used. It has all the requisite characteristics and dries rapidly. For the small manufacturer, it is probably still the most efficient finish. Its one drawback is cost. While the cost per gallon is not so great, it does not cover as well nor go as far as some other finishes. For a really good finish, more coats are required with lacquer. Even so, this extra coat or two is applied in the same length of time as the slower-drying materials.

When lacquer is used, the first coat should be a primer-surfacer that has good sealing properties, sands with little effort, and gives a good foundation for succeeding

coats. It should be sanded after about an hour's time for air drying and then followed with two or three coats of an eggshell lacquer enamel of the desired color. While the lacquer will apparently be dry in an hour or two, it will not be entirely dry, therefore the slats should not be stacked until after an over-night dry. This will prevent printing.

An Oil Paint

The next material offered is an oil paint, much like an ordinary porch and deck paint. It is fairly low in its cost per gallon, spreads well and covers fairly well. It produces a fair finish in two coats. As a rule, the first coat is not sanded much, as this type of finish does not sand well. It has a tendency to clog the sandpaper and has a rubbery feel under the paper. For this reason it does not give as smooth a finish as the other materials described here. By using a mineral spirit thinner, this type of finish drys to recoat the same day. Slats cannot be stacked without printing until the following day.

Synthetic Enamel

The third and probably the most popular finish is a synthetic resin enamel made especially for this work. It combines all the good features of the first two materials, with none of their faults. It covers so well in two coats that a much better finish is produced than with either of the other types of material, and it drys rapidly enough to be available as soon as lacquer. The first coat is flat and dries to sand in two hours. It chalks under the sandpaper much like a lacquer primer. Less sanding is necessary for a good finish, as it has a tendency to hold down the wood fibers. Some blind manufacturers dispense entirely with sanding the undercoat. It is my opinion, however, that some sanding is necessary to produce a perfect finish. The second coat is an eggshell finish and air-dries out of dust in a few minutes. To prevent printing, the slats are not stacked until the following day.

Methods of Application

Perhaps the first blind slats were hand brushed. This certainly would be a tedious and costly operation in quantity production. Dipping is hardly practicable because of the very long drain for long slats. Spraying is fairly satisfactory and this method is used by several manufacturers. Slats are placed on a frame, consisting of thick side pieces and thin cross pieces. When the coated slats are placed on the cross pieces, the frames may be stacked without the work coming into contact with the next frame. After one side is dry, an empty frame is placed over a frameful of slats and they are deftly turned over. The frame then on top is removed, leaving the uncoated side up.

Dip Finishing

A cheaper method of finishing is to dip the slats horizontally in a shallow tank. They are then run between two rollers, much like a clothes wringer. Two stiff-bristled brushes, with square-cut bristles (shaped somewhat like a scrub brush) are placed beyond the rollers so that the slats pass between them; the enamel is smoothed and a bead is prevented at the end of each slat. The wet slats are caught on nail studded trays so that only a sharp nail-end comes in contact with the wet

enamel; this prevents marring. This method has the virtue of saving time and labor, since only one operation is necessary for applying each coat. It is a messy job, however, and the long dip tank exposes a large quantity of enamel to evaporation and to whatever dust may be in the air. It is not always possible to prevent unsightly sags and runs, as there is no way of regulating the amount of enamel that clings to each slat.

Roller Coating the Slats

The most efficient set-up and the one most used is some form of roller coating machine. I will not attempt to describe here the many types of such machines now in use. Most of them are the design of each individual manufacturer. Some of them have wide rollers, so that two women can feed slats through as fast as a man can handle the loaded trays. Others have narrow rollers so that only one slat is admitted at a time. Some machines coat only one side at a time; others coat both sides. Some coat the edges of the slats, as well as the sides. Others do not coat the edges, making it necessary to stack the slats and spray or brush the edges before putting them through the coater. One concern finishes the edges in a contrasting color, after the sides have been roller coated.

An Ideal Method

A composite of all these methods and equipment indicates the following as being particularly satisfactory. This is for the highest grade finish and employs the synthetic resin type of enamel.

The coater is patterned after the conventional type of coating machine. A soft roller revolves in a shallow pan of enamel and carries the enamel to a steel roller running parallel. This roller conveys an even coating of enamel to a third roller, also soft, directly under it. A second series of rollers, with their order reversed, operates directly under this series, so that the work passes between two soft rollers and is coated on both sides simultaneously. Two vertical rollers, with individual feed pans, coat the edges at the same time.

The rollers are 5-in. in diameter and about 6-in. wide. The soft rollers are regular rubber or gelatin printing rollers. If lacquer is to be used, a special composition roller is preferable, as lacquer solvent attacks the ordinary printing roller. The steel rollers are ordinary cold-rolled steel; best speed is about 80 r.p.m. This is important, as ripples and roll marks are apt to be the result of improper speed. A table with guide strips enables the operator to start the slats through straight; feed rollers then carry them through at the proper speed. A hood placed over the material pans retards evaporation and keeps out dirt. Only a small quantity of enamel need be mixed at a time, to properly operate the machine. More may be mixed if desired. For prolonged runs, larger material reservoirs may be connected to each feed pan. After each run, or at the end of the day, the rollers and pans are carefully cleaned. If the machine is not to be used for some time, it is advisable to coat the soft rollers with some such material as vaseline, to keep them soft.

Before running the slats through the coater, they are

stacked evenly and the ends are sprayed or brushed. It is quite necessary that these ends be well sealed with enamel; otherwise, moisture will enter here and may push the finish off in blisters after the blinds are installed.

The undercoat is white and all slats are given a first coat as soon as received from the mill. This is kiln-dried lumber and, by priming it promptly, it does not take on moisture which would cause it to warp. As orders are received for blinds, the primed slats are cut to length and slotted for cords. They are then sanded and given a finish coat of the desired color. Sawed ends must be lined up and carefully coated before coating the sides.

Force Drying the Finish

Although this material air dries quite rapidly, attempts have been made to shorten the drying time by placing the work in drying rooms. Because of the tendency of slats to warp, this method never has been entirely satisfactory. A temperature of only 110° F. has caused warpage. Various concerns continue to experiment along this line and this work will probably bear fruit eventually.

The Problem of Sanding

Another problem that is still in an experimental stage, is the sanding after prime coating. To be economical, this should be a machine operation. While nearly every blind manufacturer has some mechanical means of doing this work, I have seen none of them that are satisfactory enough to deserve detailed description in this article. The operation must be rapid. Sufficient pressure is necessary to smooth the raised wood fibers, but this pressure must not be great enough to cut through the prime coat to the wood. The fact that many slats are uneven makes necessary some automatic adjustment of this pressure. There are not enough blind manufacturers in business to warrant too much time being spent by any machinery manufacturer on this sanding device. Here is a problem, however, that awaits the solution of some mechanical genius.

Super-Synthetic Enamels

SEVERAL MONTHS of research work, by a prominent paint and varnish manufacturer, have recently culminated in the perfection of a line of super-synthetic air-dry and bake enamels which offer remarkable hardness and coverage. For universal use, whether spray, dip or tumble, these finishes have unusual adaptability, and where necessary, they may be modified to meet any special application procedure.

The manufacturer stresses the greater economy of these new enamels over the regular run of synthetics and states that several manufacturers, who have before been using straight oil-type enamels, have now switched to these synthetics because of their higher quality and new economy features.

Manufacturers of high-grade wood handles, toy manufacturers who use tumbling enamels, and those manufacturing high-grade metal products, have found that these enamels are remarkable in quality and economy. Other manufacturers, who in the past have found it impossible to use synthetics because of price, are rapidly switching to these new synthetics.—N. A. E.

« Graining on Metal »

by Armin Furrer
Grainer

"During the past 14 years I have had wide experience in finishing kalamein hollow-metal doors and steel partitions."

■ ■ ■

IN MOST cases the metal cleaning process remains the same; namely, sandpaper for rust spots, followed by a benzine wash for removing grease and dirt. Chemical cleaners, soluble in water or in petroleum products, are widely used and it is for the finisher to decide which material and method best suits his particular product to be cleaned and finished. Manufacturers of chemical cleaners freely offer the services of their experts in advising and demonstrating how to clean your product economically and satisfactorily.

Priming; Filling

It is important to immediately protect the cleaned metal surface with a suitable primer before rust sets in, especially in cases where the metal has been rinsed in water and oven dried. Years ago, a good metal primer had to be baked three hours at 275°F. Today a one-hour baking, or even less, will fulfill all requirements —that is when primed with fast-bake materials.

Many products require filling—for example at welding spots and seams, etc. One and more often two coats of filler, knifed on, are necessary—each coat being baked and then sanded down smooth by hand or by machine. The surface is then dusted off and made ready for the graining undercoat. In most cases one coat of graining undercoat is sufficient; for oak and maple imitation, generally two coats will be necessary.

Mechanical Graining

More concerns than ever are now using graining plates from which the workman transfers the inked design by means of a soft composition roller from the plate to the product to be grained. A special graining ink is on the market for this method. For some manufacturers whose products are of various sizes and forms, and for some who do custom work, the old hand graining method still prevails.

Hand Graining

For walnut imitation I proceed as follows: Mix a stain, starting with:

Turpentine	(parts) 2
Boiled linseed oil	1
Drier	a few drops

Into this mixture Van Dyke brown is added until I have the right shade. The stain is brushed on very thin and even, so that the undercoat shows through.

On a palette I place a small

can partly filled with turpentine. Nearby I have a small quantity of drop black and also a little burnt umber. With an overgrainer 2-in. wide, dipped lightly into turpentine and black on the palette, I put in the figures or crotch grain. The remaining grain, that is to say the side parts, is done with a 4-in. overgrainer; a little Van Dyke brown or burnt umber can be worked in here and there. The dark veins are drawn in with one point of the overgrainer dipped into a little black. When slightly set, the grain is softened with a mottler and then blended with a blender. Pores are optional. After baking on these graining colors, one or two coats of fast-bake varnish are applied. Some products require rubbing and polishing; others get just one coat of semi-gloss varnish.

Up to 1926, most architects refused to accept work finished entirely or partly in lacquer, and even today most specifications require that each coat of material be baked on separately. However, we now have available such a vast number of synthetics and other rapid-baking enamels, all of which surpass the old slow-baking finishes, that it should be comparatively easy for the finisher to improve on his finishes and also increase his output in comparison to what was formerly accomplished.

Finishing Room Fires—V

IT IS THE unlooked for in fires that usually happens. A furniture manufacturing company of Los Angeles, California, had a fire a few years ago that caused several thousand dollars loss by fire and water—mostly by water. The facts are as follows:

The furniture company occupied a one-story plant covering 60,000-sq.ft., all departments being on the same floor. The plant, and especially the finishing room, was kept as clean as such a plant can be kept. All dirty rags and rubbish were removed, the final job every night being to clean out the spray booths and exhaust pipes of all loose material.

Right next door was a vacant piece of property. The law in this city is that when weeds get high during the hot summer months, the property owner is required to plow them under at his own expense or burn them off. If, by a certain date, this is not done the city handles the job, charging same to taxes.

Well, the property owners failed to clear the lot in 1931 so city employes burned off the lot. Since the property line was about 10-ft. from the furniture factory, they paid no attention to the spray booth exhaust pipes extending out from the building about 5-ft. above the ground and blow-

A New Finish May Shift the Scales for You » » »

WE DO NOT CLAIM to be miracle workers. But when hundreds of Egyptian users report healthy sales increases and lowered finishing costs—the ability of Egyptian Finishes to shift the scales from loss to gain is rather convincingly demonstrated.

That a new day in product finishing is here no one with half an eye can doubt. A product may be finely constructed and mechanically perfect—and still be a veritable *wallflower*. While an inferior competitive product waltzes away with *Sales* because it is surrounded with glamour and selling appeal—because it is smartly finished. It's discouraging, but true, that even the finest product will be ignored if the customers can't "see" it.

Let Egyptian help you choose a new "dress" for your product—a finish that will immediately attract the roving eyes of the buyers; one that will be a profit-maker.

EGYPTIAN · LACQUER

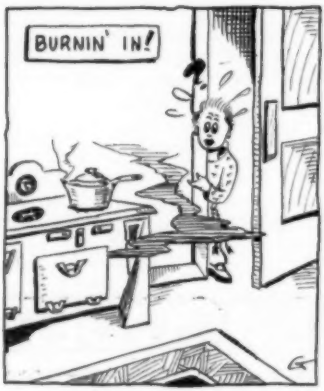
THE EGYPTIAN LACQUER MFG. CO. ● 90 WEST STREET, NEW YORK

ing all the dry materials over the vacant property. When the fire of the burning weeds reached within about 20-ft. of the building it struck this patch of weeds that had been covered for some months by the exhaust from the lacquer spray booth—and it acted as though it had burned into gun powder. The fire followed the exhaust pipe right into the booth, setting it afire. At once the sprinkling system started and the interior of the plant was soon partly covered by water.

The only thing that saved the property was the prompt action of the sprinkling system. The spray operator was saved by the fact that he and his helper were out to the oil house, on the other side of the building, getting finishing material. This particular factory never carried more than five gallons of lacquer and thinner at each spray booth at one time, and no doubt this was a large factor in saving the plant. High grade radio cabinets, dining room suites and piano benches were manufactured in this plant and naturally the fire and water did a lot of damage to veneers and solid woods.

After this fire the management decided to build, outside the building at each spray booth, a flue into which the exhaust pipe ran, dropping all the fine material to the bottom of this flue, and every day this bottom was cleaned out. This also prevented the dust from scattering all over the property next door, and gave a satisfactory solution to the problem.

The spray booths were covered on the inside with waxed paper, which was removed every week-end and replaced with new paper. —ORRIE D. MAAL.



Firm Name Changed to Spray Engineering Co.

The name Spray Engineering Co. replaces "Spraco, Inc." (Engineers and Manufacturers) 114 Central St., Somerville, Mass. Quoting from a letter by the President, Mr. W. B. Thompson:

"Since the adoption by the company of the name 'Spraco, Inc.', in 1928, there has been considerable confusion in the minds of many of our good customers with whom we have had business relations for the past 20 years or more, and it is with pleasure we can now inform you that we have adopted the name of the parent company—SPRAY ENGINEERING Co. This change is in name only and in no way affects our charter, personnel or business policy. All existing contracts in the name of 'Spraco, Inc.' will be considered as effective under the name Spray Engineering Co."

Booklet on a Synthetic Resin

A new booklet of 20 pages inside heavy paper covers, 6x9-in., reveals and explains a great deal of interesting technical information about the properties, characteristics, merits and uses of Nevill resin (a synthetic resin) which is used so effectively in several industries including paint and varnish, printing ink, waterproofing, adhesive, insulating and paper. It is being distributed by The Neville Co. (Coal Tar Products) Neville Island Post Office, Pittsburgh, Pa.

This new **BINKS THOR** *Model 6 Spray Gun is much more efficient*

and

It's newly developed **SPRAY CONTROL** *Improves performance*

Binks now offer a new and vastly improved Touch-Up and Shading Gun—the new THOR MODEL 6. Note carefully the new adjustable spray feature! See how conveniently it is placed (just behind the nozzle head) so that it can be adjusted while the operator sprays. Built with a watchmaker's precision and with the sturdiness of a fire arm, this new Touch-Up Gun will share the success of the famous Thor Model 2. Here is the Touch-Up Gun you have been waiting for — one that solves your finishing problems in the way you hoped they would be solved. Don't delay. Test the improved performance of the Thor Model 6 on Touch-Up and Shading Jobs in your shop. Send your order today to the

Thor Model 6 Adjustable Spray, Pistol Grip Spray Gun, with Pint Cup. Gun only $18.00. Pint Cup and Att. $3.50.

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Manufacturers of COMPLETE Spray Painting and Finishing Systems

Dip Coating Wood Blocks

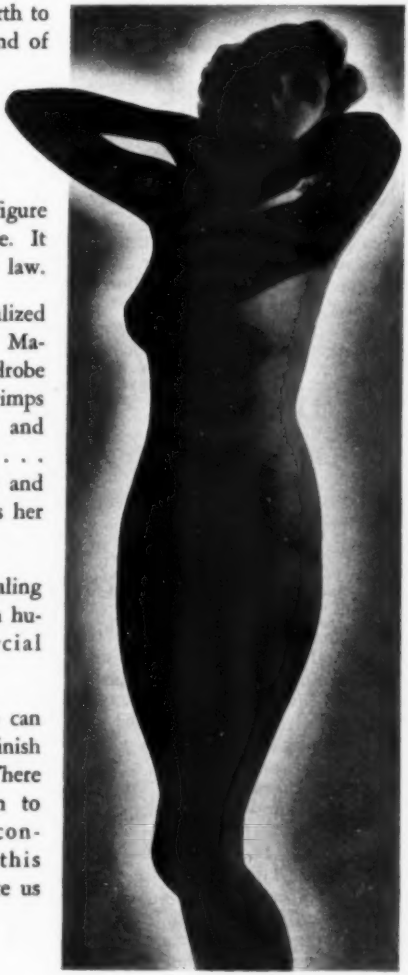
The dipping machine for dipping racks of wood blocks into individual containers of colored lacquer enamel. In case of fire, fusible links melt and let the suspended fire door drop.

by Harry L. Jenkins

THE BEST method of dip-color-coating wood parts will necessarily depend upon the size and shape of the parts, the quantity of daily production required, the quality and kind of finish demanded, the facilities available, and whether the factory routine consists of steady repetition work on a few standard items, or intermittent work on a variety of items or custom jobs. Other conditions also enter into the picture, therefore to offer something definite and tangible I will attempt to describe and illustrate the present method of dip-color-coating just one item in our line.

The particular item is what we call shoe-polishing blocks—smoothly sanded wood pieces of approximately the shape shown in Fig. 1, and measuring about 1⅛x1⅞x6-in. We occasionally try different woods for these blocks, such as poplar, white pine, tupelo, magnolia, or any wood that is

WHEN Fatima goes forth to the bazaars in the land of Mohammed she must be completely veiled even though her lips may be rosebuds . . . her cheeks as soft and lovely as an evening zephyr . . . her figure like a sculptor's masterpiece. It is tough . . . but it is the law.



Here, the eye is not penalized . . . beauty is unrebuked. Mademoiselle selects her wardrobe with great care . . . she primps . . . she creams, powders and tints with artful deftness . . . to enhance her radiance and graceful lines . . . finish is her trump card.

Finish may be either appealing or repulsive . . . both with humans and with commercial products.

With the latter, our studio can be of service in creating a finish best suited to your product. There is no charge or obligation to reputable concerns for this service. Write us for details.

Rockford Varnish Co.

ROCKFORD, ILLINOIS

moderately soft and even in texture. What you would call the back of the polishing block is really the face side for us because it is the side that shows when the polishing block is complete. This face side and the ends and edges must have a smooth, lustrous, colored-enamel finish. Formerly we did the job in two coats but now we use only one. The blocks are machine dipped in multiple, so they get an all-over coating quickly and with a minimum wastage of lacquer enamel.

As in the case of most wood products that receive finish coat-

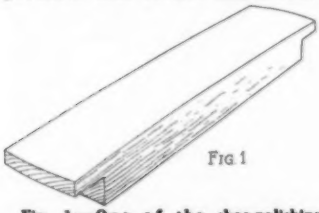


Fig. 1—One of the shoe-polishing blocks "in the white." Note the slight curvature of the back and ends.

ings, these wood blocks come to us smoothly sanded and clean. They are air-dusted several times in the woodworking machine room with an air nozzle connected to the compressed air line. The blocks are attached to a dipping rack in multiple (see Fig 2), three double rows, seven blocks to the row, making a total of 42 blocks to the rack. Each rack or dipping board has six rows of slender pointed blades or pointed pins which are pressed into the ends of the blocks by using a rebuilt hand press, leaving the free ends of the blocks all in proper alignment. This is important, as you will see later. The blocks are air-dusted before and after assembly in the dipping racks.

Loaded dipping racks are placed in partitioned compartments of factory trucks and moved to the multiple dipping machine. Here each rack is attached to the lower end of one of the several perpendicular rods which move slowly but continuously up and down. On the down stroke of a rod the rack of blocks attached thereto is dipped into an individual container of colored lacquer enamel, and on the up stroke the coated blocks are slowly withdrawn so the surplus enamel peels off by its own weight. As the rod rises high above the container of enamel, the attendant withdraws the rack of coated blocks and transfers it again into the compartment of a factory truck. A typical compartment appears in Fig. 3. A shallow drip pan is placed in the bottom of each compartment.

If we were working under ideal conditions perhaps there would be no drippings after racks are withdrawn from the dipping machine—and no fatty edge or heavy drop would form at the lower ends of the coated blocks. We have been getting closer and closer to this ideal and we are still working for improvement. When fatty edges or drops do form at the lower ends of the blocks, after

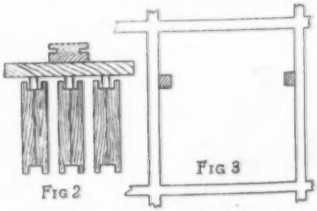
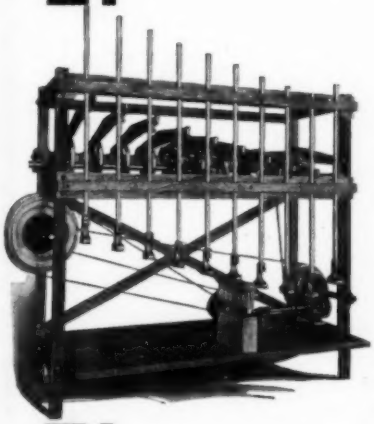


Fig. 2—End view of loaded rack of blocks before and after dipping.

Fig. 3—Cross section of typical compartment in a 60-compartment factory truck (5 high by 6 long on each side), into which the loaded racks are placed.

Dip Finishing More Economical and the Smith Machine Does the Work



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Finish Today—Ship Tomorrow

All kinds of wood handles, toys, wire and metal items at the rate of from 25,000 to 100,000 pieces per day.

From coast to coast, in Canada and all foreign countries, you'll find Smith Dipping Machines doing just that. Kitchen utensil handles of every description and other items too numerous to mention are finished in the Dipping process of the highest quality to be obtained at the least possible cost, doing away with ovens and other systems of drying.

Submit samples for finishing—no charge. Estimates furnished. . . . Write or wire—and descriptive matter will be sent you promptly.

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Even SOFT WHITE HANDS

DEFACE *and* DESTROY!

TWO HANDS—soft and beautiful. Surely their touch can only be velvety—soothing.

But watch these same hands in the kitchen! Though they touch ever so lightly and capably, they are hands heavy with damage. Oft repeated, their touch mars and discolors.

That refrigerator, for instance. It started out a clean and glowing white. Then, hands tipped with household greases touched it, touched it over and over again—left their unseen marks. These grease spots turned rancid and formed acids which ate into the finish, softened and discolored it. Gradually, the refrigerator lost its shining beauty and was no longer white.

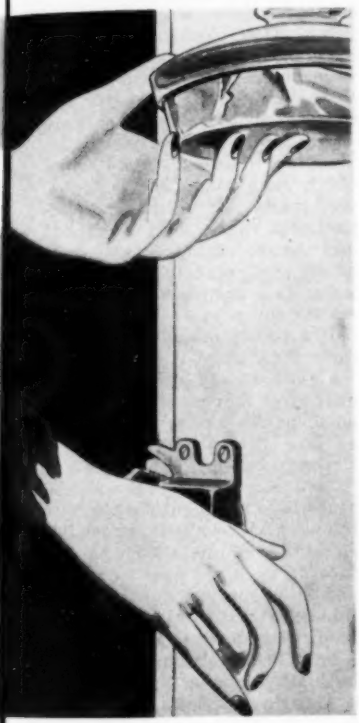
How could it be kept white? How could it be given a finish that would not only withstand the effects of acids, but dirt and bumps and knocks as well? Here was a problem that du Pont chemists solved only after months of unremitting study and research.

But when they did solve it, they had developed an outstanding finish for refrigerators. Its name is DULUX. Since its introduction, DULUX has been used on more than 900,000 household mechanical refrigerators—outstanding proof that this finish completely answered the finishing problem.

This achievement, a distinct service to both industry and home, is only one of many in du Pont history. In their efforts to obtain finishing materials of greater service value, du Pont chemists have been responsible for many of the

DUCO . . . PAINTS . . .

Reg. U. S. Pat. Off.



major developments in finishes in the past ten years.

Here are a few: DULUX for trucks, steel bridges and dynamos. DUCO for automobiles, adding machines, metal signs and electric fans. DUCO and DULUX for washing machines, steamships, children's toys, trolley cars and motorcycles. And other quality du Pont finishes used by leading manufacturers of office and household furniture, gasoline pumps, Pullman cars, and many vital and necessary things in daily life.

No matter what type product you manufacture, there is sure to be one or more du Pont finishes which can be used to make it more lastingly beautiful and easier to sell. These finishes provide a safeguard against deterioration and loss. E. I. du Pont de Nemours & Co., Inc., Finishes Division, Wilmington, Del.

DU PONT
REG. U.S. PAT. OFF.

FINISHES
for industry and home

VARNISHES . . . DULUX
Reg. U. S. Pat. Off.

they have hung in the truck a short time, we remove the slight excess material by "blotting."

You will recall that the blocks were so racked at the special hand press that all of their free ends were aligned even or level as they hung in the rack. This even alignment of the blocks makes possible the blotting of fatty edges of all the blocks in a rack at one time. Our blotting paper is paper towel stock stretched flat over a smooth level table. To blot a rack of enameled blocks, the workman simply pounces the rack of blocks down upon the absorbent towel paper and quickly lifts it up again. It's the same principle as blotting wet ink. Blotted racks of blocks are again placed in the compartments of trucks for final air drying.

When the enameled blocks have become dry they are removed from their racks. Here again, if everything has been ideal, the enameled blocks come off the racks with a perfectly smooth lustrous color on the backs and all four edges, including the blotted ends. These enameled blocks must go out perfectly finished, therefore at this point they are very carefully and critically inspected. First the inspector turns the rack of blocks and looks at the blotted ends. If any of them are imperfect in any detail he touches them up quickly with a special brush (a shoe-blacking dauber).

Before removing the blocks from the dip rack, the workman slides the rack into a holder on the wall above his work bench, where it hangs in such a position that the blocks stand out horizontally and point toward him; then he can work with both hands. He pulls the blocks off the pins, separates those that are stuck together (the blocks having been mounted in twos in close contact, as shown in Fig. 2) and inspects their face sides closely for any traces of roughness, pimples, runs, etc. Those that are perfectly finished are placed in small trays, which in turn are laid up in factory trucks and moved to the department where labels are applied and the sheepskin, felt or composition material is attached to make them complete hand polishers for shoes.

If a pebbly, pimply or unsatisfactory condition is discovered in the finish on any block, the workman gives that block one or more quick passes across a long sheet of fine sandpaper which is stretched between end supports so it will sag under pressure and conform to the slight curvature of the block. Blocks that receive this smoothing up are laid out flat and face up on large panels or trays and later sprayed lightly with a thin color coat to give them their required luster and smooth finish —or to heal the wounds produced by lightly sanding them.

A further period of air drying leaves the finished blocks complete and ready for the attachment of shoe brushing felt, sheepskin or whatever composition material is to be used for polishing.

Bonderite and Parcolite rustproofing processes are intended only as a base for paints, enamels and lacquers. The object of these processes is to convert the metallic surface of iron and steel products to an insoluble coating of manganese and iron phosphates, producing a chemically-clean, grease-free surface for the application of the final coats of paint.

Our experience in selecting, installing and operating . . .

A Modern Baking Oven

(PART II)

by M. M. Miller

TO FURTHER save fuel and insure uniform temperatures at all points, which is so vital to preventing color variations, a recirculating system inside the oven was specified. The recirculating system circulates part of the hot oven air with a certain amount of fresh air so that proper ventilation may be attained, and at the same time we utilize as much of the heat in the oven as possible before exhausting it.

Temperature Control
Exhaust Oven Vapors

The method decided upon for controlling temperature was by a manual setting of a direct-reading thermostat installed in the gas supply line. With this it is merely necessary to set the thermostat to any oven temperature and the oven will be held to that temperature.

The burnt gases or products of combustion are exhausted directly to a stack which is always fully open to the atmosphere. No damper was provided — this in order to eliminate any danger of explosion.

The oven vapors which consist of fumes from finishing material, such as thinners and other volatile matters, are exhausted through a separate stack aided by the recirculating fan. This stack has a damper, affording control of the stack opening. The stack should be kept fully open for about the first 20 minutes of a bake, after baking temperatures have been reached, in order to allow the volatile matters to completely escape. Over 90% of these volatiles will escape in this time

Editor's Note: The first installment of this article appeared in October issue, pages 32 and 34. Through an error, the last part of another article on bake finishing was inserted on page 36 of that issue, as the end of Mr. Miller's feature write-up. However, what appears here is the final portion of Mr. Miller's "A Modern Baking Oven," starting here with the beginning of the last paragraph on page 34 of the October number.

★ ★ ★

and then the damper can be partly shut to conserve heat, since, with the volatile matters gone, the danger of an explosion due to the building up of an explosive mixture inside the oven is practically eliminated.

Precautions Against Explosions

An electric switch to start the recirculating and exhaust fan is electrically connected in such a way that the gas cannot be turned on to the oven until the fan is running. As soon as the fan switch is pulled to stop the fan, the gas is automatically shut off. A further safety feature in this connection is a vane in the exhaust side of the fan which provides that in case the fan switch is on but the fan is not sucking air due to a broken vane, blocked duct, etc., the vane prevents, by an electric circuit, the gas being turned on to the oven. All of these precautions are necessary to prevent the building up of volatile matters to the point where they would ignite from heat of the oven.

Despite all these safety precautions it is always possible that in some isolated case an explosion might occur, and to prevent serious damage to the oven the roof of the oven is made so as to be capable of being entirely blown off in sections by the explosive force, thus relieving the pressure and preventing damage to the oven itself.

Oven Temperatures
Exhaust Stack

Oven temperatures within are indicated on the outside of the oven by a recording thermometer which has been calibrated to read in unison with the temperature control of the thermostat. The recording thermometer also serves as a check to the management in seeing that proper baking schedules are being maintained. A few other things of extreme importance are: setting the oven over a level floor, lining up the stack so that it goes directly out in a straight line without undue bends or slopes, and making sure that the oven is located at a point sufficiently strong to carry it with its load. In our case, being on a wood floor, it was necessary that we place under the oven the following, in the order in which they were placed: one layer of sheet metal, one layer of asbestos sheeting, one layer of 6-in. hollow tile, one layer of asbestos sheeting, one layer of sheet metal.

The stack should extend well above the level of the roof and also above nearby roofs or other obstructions. The hole through the roof should be about twice as large in diameter as the stack. The stack should have an apron over the hole through the roof, which apron should be well ventilated, as otherwise in the case of a pitched roof the heated oven will melt the pitch all around the stack and cause water leakage at this point.

Oven Operation

Handling of trucks, when unloading the oven, should be done with heavy asbestos gloves which are sold for this purpose.

We had considerable trouble at first with color variations when using a high-bake white finish. We feel that most of these variations were due to our lack of understanding of the oven. Manipulation of oven dampers and adjustments to the circulating sys-

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EVERY barrel of Du-Pros Strictly Pure Shellac is freshly made when shipped. But freshness is only one of the reasons why Du-Pros gives superior results.

Du-Pros is made only from pure shellac gum and government formula alcohol. These high grade ingredients are put through a double manufacturing operation which cuts the gum into the finest solution. All traces of foreign matter are removed.

As a result, Du-Pros is known as the pure shellac that always flows out well, dries dependably, and sands smooth with a few crisp strokes.

Every good finish deserves at least one coat of Du-Pros Strictly Pure Shellac.

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tem are provided by all reliable oven manufacturers, so as to practically do away with any serious troubles. So many new finishes are being put on the market that many plants would find that the purchase of an oven gives them a new field and a new touch to their product which, in the case of the writer's experience, will pay for itself in one year's time. The durability of the finish is vastly improved by baking, and the speed with which the entire finishing operation can be completed is truly amazing.

The writer has also tried a home-made oven and can frankly say that it does not pay.

Metal Spraying

METAL SPRAYING has come to assume a place of importance for many industrial products. Such metals as aluminum, zinc, tin, nickel, copper, lead, bronze and brass are being successfully sprayed. The sprayed coatings are applied to any required thickness over .001-in. The surface to be coated must have an open texture and must be thoroughly cleaned; with metal products this condition has been best obtained by sandblasting just before the spraying process—using high pressures and exceptionally hard sand. Air pressure commonly used for this work is 30-lbs. per sq.in., and a black flint sand of about 20-mesh grade has been found desirable. For most purposes it is advisable to use a $\frac{1}{8}$-in. nozzle, which will consume about 100-cu.ft. of air per minute.

One use for metal spraying, which is making rapid progress, is in protecting steel and iron products from high-temperature oxidizing, by means of the application of aluminum. Products are sandblasted and sprayed with the aluminum, after which they are painted with a bituminous preparation and heated rapidly to about 1292° F. in a furnace. The aluminum alloys with the iron or steel and the surface layer oxidizes, forming a film which prevents further scaling temperatures between 1742° and 1832° F.

Many other uses for sprayed metal coatings have been found in industrial production work.

With the increasing demand for more novel and enduring finishes, the application of the metal spraying process bids fair to enter into a rapid and interesting development.—C. F. SCRIBNER.

Arco Adds Salesmen

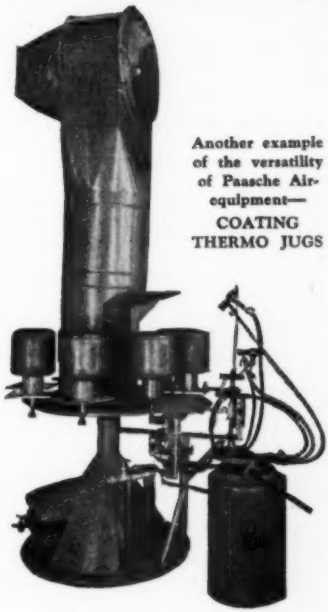
Mr. E. F. Cathcart, Industrial Sales Manager of The Arco Co., Cleveland, Ohio, has just announced the appointment of two additional industrial salesmen. Mr. C. I. Jones will represent the firm in Indiana, and Mr. G. I. Findlater will serve in Michigan.

If You Want It Finished BETTER

by AIR

Consult

Paasche



Another example of the versatility of Paasche Air-equipment—
COATING THERMO JUGS

For over a quarter of a century, Paasche has specialized in originating, developing, perfecting airfinishing equipment, until today—

Anything Can Be Airpainted or Airfinished

with Paasche *Airequipment*

If you want to improve your finishing methods or to secure better airfinishing results, let our airfinishing engineers submit suggestions. No matter what kind of coating, lacquering, painting, decorating, rubbing or finishing you are doing—you can do it better, quicker, cheaper the Paasche way.

Paasche Airbrush Co.

Branches in all principal cities, Canada and Foreign Countries

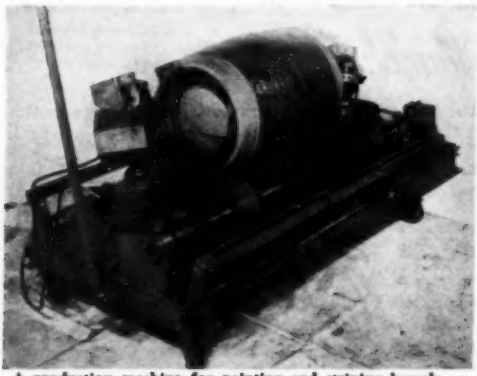
1917 Diversey Parkway Chicago

Paints Barrels, Drums Mechanically

CAPABLE of decorating from 100 to 150 metal or wooden beer barrels (or other tight barrels or steel drums) in an hour's time, giving them a nice shiny coat of paint and any desired combination of colors and stripes, a new automatic barrel-painter has just been brought out by the Reynolds Metals Co., 541 W. 25th St., New York, N. Y. The machine is light and simple; can be easily moved from one part of the plant to another.

All that is necessary to paint large quantities of barrels is to set the paint guns to throw the desired size ribbons of paint, turn on a motor, and then feed the barrels to the machine. In operation, the machine employs specially patented guns that can be adjusted to give off ribbons of paint ranging from ¼-in. to 15-in. without varying. These ribbons, even when almost hair lines, are mathematically straight and true.

The guns on the machine give no spray or paint fog, so the operators need no spray booth or other customary safety devices. Working on entirely new centrifugal principle the paint guns also feature a special nozzle which cannot clog.



A production machine for painting and striping barrels.

What's New « «

Briar Pipe Finish

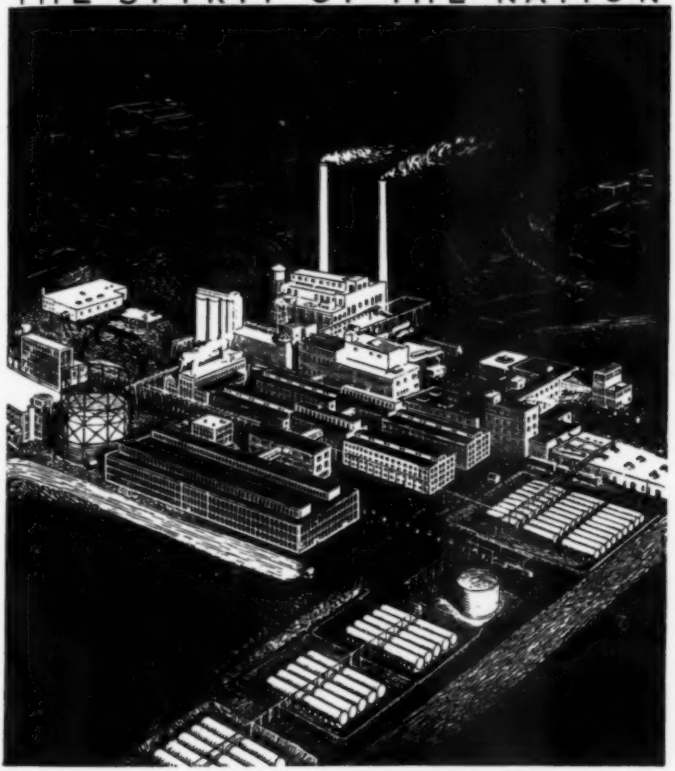
A NEW BRIAR pipe finish, which comes ready to spray, and which air dries, has recently been developed by the Roxalin Flexible Lacquer Co., 800 Magnolia Ave., Elizabeth, N. J. The beautiful luster of this flexible lacquer finish is retained because its fine pores allow the moisture to "breathe" out. This unusual characteristic prevents blistering, flaking or peeling. Thousands of service tests have shown that high heat from steady smoking and perspiration from constant handling do not affect the finish.

Aircraft Fabric "Refinish"

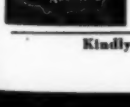
THE GLIDDEN CO., Cleveland, Ohio, announces a new product called "Glidair Fabricote," which is an effective overcoater or refinish coating for the checked or cracked finish on airplane fabric. The old cracked finish does not need to be removed. The surfaces to be refinished are simply cleaned and dried, after which this rejuvenator can be sprayed on. It softens the finish, causes the cracks and checks to amalgamate, tautens the fabric and forms a good foundation for the application of the final finish

ROSSVILLE ALCOHOL

THE SPIRIT OF THE NATION



THIS ILLUSTRATION OF ONE OF THE FIVE GREAT PLANTS OF COMMERCIAL SOLVENTS CORPORATION SUGGESTS OUR CAPACITY FOR SERVICE TO YOU.



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coats. Three or four coats are sprayed on, with an interval of 10 minutes to an hour or more following each spraying, as per directions. The use of this refinish is the means of adding many months of useful life to the fabric of the airplane.

Propeller-Type Fans

NEW STREAM-LINED airplane propeller-type fans for ventilating and exhausting purposes are announced by Propellair, Inc., Springfield, Ohio. Prepellair fans are constructed on advanced principles of aero-dynamics. As their name implies, Propellair fans are of the airplane propellor type, and propel the air for both ventilating and exhausting purposes. A special type of construction exclusive with Propellair models applies "stream-lining" to

airflow, thus increasing the air delivery capacity of the fans with minimum power requirements.

Models are available for mounting on pedestals, brackets, posts or walls; or in the openings in walls, ceilings or floors. The wide variety of styles and sizes make the services of a Propellair fan available wherever controlled movement of air is required.

A Coating Machine

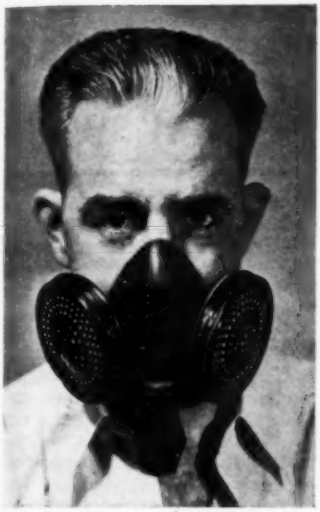
THE CHAS. E. FRANCIS CO., Rushville, Ind., has recently developed a coating machine for applying paints, varnishes, enamels and lacquers to flat surface work. The applying roll, which is of soft rubber composition, receives and has its coating regulated through a transfer roll which runs in adjustable contact with both the applying roll and a fountain roll. The fountain roll runs in a bath of the coating material.

The machine for single-coating is arranged to deliver the work with the coated side up, thereby minimizing the possibility of marring the surface by handling at the off-bearing end of the machine, and making it a simple matter to have the machine deliver on a conveyor belt to feed through a drying oven.

"Comfo" Respirator

THE MINE SAFETY Appliances Co., Pittsburgh, Pa., has introduced a new low-priced dust respirator that departs radically from old ideas of design. The new protector, called the MSA Comfo-Respirator (patented), has twin filters, one being carried on each cheek. This results in: 1) the filters are removed from the path of the moisture-laden exhaled air; and 2) the filter area is greatly increased. The unusually large filter area—combined with the use of special filter material, scientifically treated to stop microscopically-fine dust—gives the Comfo exceptionally high protective efficiency, low breathing resistance and long filter life.

The Comfo-Respirator is especially designed to remove workmen's characteristic objection to dust respirators on the score of discomfort. It is extremely light in weight (less than 5-oz.), easily and quickly adjusted, does not interfere with vision or the wearing of goggles, etc., and places no hardship on breathing. The light rubber nosepiece makes a tight seal with the face, and both the nosepiece and the filter cases (made of aluminum) are readily kept clean and sanitary. Filter replacement has been



Looks different . . . and is different

made simple and foolproof, and due to the long service life of filters, maintenance costs are reduced to a minimum.

The development of this revolutionary type of dust respirator is especially timely, in view of management's present interest in effective means of preventing silicosis, and other lung ailments caused by occupational dust conditions.

Single Coat Finishes

MANUFACTURERS of many metal products are using large quantities of white and light-colored baking enamels of the newer quick-drying kind, containing rezyl gums. Many of these finishes give excellent covering with only one coat.

The finish is sprayed on and baked for about one hour, at a temperature of about 200° F. The resulting finish is the most enduring single-coat finish developed to date, with the exception of black japan which requires baking at much higher temperatures.

Where the pigment is carefully selected the drying involves no discoloration, even with the lighter colors, and the finished product is equal in appearance and durability to many of the two or three-coat jobs with older types of finish. To avoid discoloration in white enamels of this type, titanium dioxide is the pigment employed. Enamels are also available for ordinary air-drying in about four hours and, while baking may improve the durability somewhat, ovens are no longer essential equipment for this class of product.—C. F. SCRIBNER.

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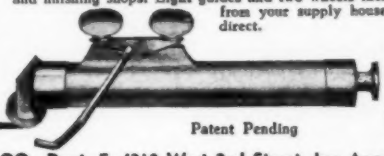

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Questions « Answers

Silk-Screen Stencil Sandblasting

We noticed in your October issue, page 47, a reader's request for information on a "Silk Screen Method for Sandblasting." We, too, desire data on this subject and will appreciate knowing sources of information as to how this is done and also where proper equipment and supplies can be obtained.—S. B. Co. (Factory Finished Flooring).

Answer by Bert Zahn, author of "Silk Screen Methods of Reproduction":

Without going into details as to the various processes that go into the workings and make-up of the operation of sandblasting, but going immediately into detail on the use of silk screen work in connection with sandblasting designs on glass, various uses and demands necessitate the blasting (or roughing) of only certain portions of the glass surface. In the case of a single copy, it is a simple matter to protect with stencil or other means, the surface not desired to be blasted—as usually the price for a single copy is made high enough to allow these various operations. But if many are to be run, the selling price must be considerably less, therefore a means to block out the background and thereby protect the glass with a "resist" must be employed.

The theory most practical and accepted is the use of a "resist" which is screened on the glass to prevent the air-driven abrasive from striking the resist-covered portion—the sand hitting this "resist," which has become a soft flexible film, and bouncing off. A water-soluble "resist" is best suited for this work, but this necessitates a more careful handling in the preparation of the silk screen.

The water-soluble "resist" can be mixed from dextrine, gum arabic and water-cooked hide glue, with a small quantity of glycerine and a small quantity of water, or regular thinner sold for this purpose. Mix them together, never allowing the solution to lose its paste form, as a thin resist is sure to result in a ragged edge. My reason for not giving the exact measured quantities of ingredients for the "resist" is that the proportions need to be changed slightly according to climatic differences. This water-soluble "resist" can be easily washed off afterward with water. A solution is now in the process of manufacture by a company in Chicago, and further information can be obtained by writing me at this company.

The silk screen is prepared the same as for other service, but profilm is best suited as a masking material, because when profilm is attached to the screen, the entire top edge is coated with a protecting lacquer—this to prevent the water-soluble "resist" from soaking up the profilm. This profilm is a special plate paper treated with rubber cement and lacquer. The paper is transparent, which allows it to be placed over the design to be reproduced.

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Our earned slogan, which has hindered our progress in low-priced, inferior merchandise. Only when we can sell at a price permitting of "Unquestionable Quality," will you find us competing.

We truthfully believe economy can not be determined by the price per gallon, but must be based entirely on *results* per gallon.

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With a sharp stencil knife the design or lettering is cut through the lacquer solution; it then is peeled off, leaving the bottom of the paper to hold the balance of the design intact. It is made to adhere to the screen with lacquer thinner.

In conclusion let it be understood that the purpose of the silk screen stencil in sandblasting glass is to provide an accurate guide for the application of a "resist" material that clings directly to the glass around the design to be treated, and protects it from the blown abrasive sand which cuts or etches the unprotected portions of the glass.

To Marbleize Wood

Referring to W. G. P. Co's question under the above title, on page 6 of November issue, I have found the following method practical for producing marble effects on wood or metal surfaces with lacquers:

The first operation is to coat the surface with a white lacquer primer-surfacer. When thoroughly dry, prepare a mixture of glycerin thinned 10% with water. Spatter this mixture on the white lacquered surface with a spray gun that has a spattering nozzle attachment, or by some hand process—for instance by using a whisk broom. Then use the whisk broom, your finger or a piece of cloth to spread the spattered liquid to the grain effect desired. By various skillful motions and a little care, some wonderful marble patterns can be produced.

The next operation is to spray a light coat of any color (dark green, for example) according to the color effect desired. When this coat has dried thoroughly, wipe the surface with a rag saturated with water; this operation will remove the glycerine solution and leave a wonderful marble pattern effect.

If any other tonings with various colors are desired they should be applied transparently, so as not to disturb the marble grain pattern produced. When thoroughly dry, a finish coat of clear lacquer can be applied. — J. E. GREENE.

Paint for Canvas

In your "Letters from Readers" column on page 6 of the November issue, K. W. K. inquires about paint for canvas, stating that ordinary house paint soaks through the canvas and makes it stiff and hard. Ordinary house paints have neither the proper body nor viscosity for use on canvas, although this drawback may be overcome to some extent by thoroughly soaking the canvas in water before applying the house paint.

However, by far the best procedure would be for K. W. K. to secure properly formulated awning paints. These have the correct body and viscosity for coating canvas, and are made with a special oil that prevents excessive penetration of the paint into the canvas. These special oils also give the coating the required flexibility.—A. F. BYERS, Sales Mgr., Benjamin Franklin Paint & Varnish Co.

Old Bone White Finish

On page 30 of your November issue there is an inquiry about "Bone White Finish" to which a

very interesting and informative answer is given. For a high grade finish of this type, several of our customers are using the following schedule.

Old Bone or Antiqued Finish

1) Spray one coat white—wood undercoater; dry two hours.
2) Sand with 6/0 sandpaper.
3) Spray one coat—flat white lacquer; dry two hours.
4) Sand with 6/0 sandpaper.
5) Brush gold bronze on edges.
6) Brush and wipe antiquing stain; dry two hours.
7) Spray one coat of water white flat lacquer.

A few months ago, we distributed panels representing this finish to a number of the furniture manufacturers and if you believe this inquirer would be interested in one, we will send one through to you to forward, or will send it direct, as you prefer.—The Sherwin Williams Co.

Sandblasting Castings

TO OBTAIN satisfactory results with sandblasting it is necessary to provide an ample supply of compressed air. The pressure that should be used depends upon the nature of the work. For cleaning light castings, such as stove castings, I suggest using an air pressure of from 5 to 10-lbs.; for medium castings and heavy iron castings, use 15 to 20-lbs.; for steel castings, use 30 to 75-lbs.

The air piping connections to the receiver and the sandblast should be not less in diameter than the air connection of the sandblast, but if the distance between the receiver and sandblast is over 75-ft., the piping should be larger than the air connection of the sandblast to allow for the loss of pressure from friction. It

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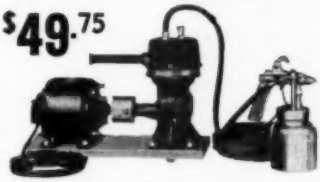

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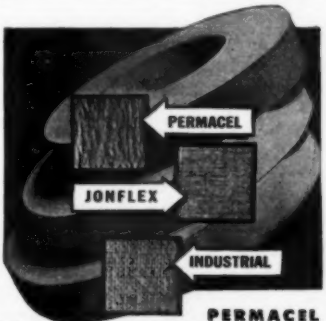

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is not that the sandblast will require all of this air, but the most satisfactory results are obtained by having a backing of air behind the jets.

The compressed air piping should be protected from condensation, especially if the lines are long. Moisture must be kept away from the sand to insure proper working of the apparatus.

The sand used in sandblast cleaning should be sharp, clean quartz or silica sifted through a screen of the proper mesh and dried long enough before hand to be cold when used. When using a ¼-in. nozzle, the sand should be passed through a No. 8 mesh screen. With a ½-in. nozzle, much coarser sand can be used. A coarser sand is very effective for general work such as for cleaning castings. For sandblasting large areas I suggest using a mixture of 70% sand and 30% steel shot, with an air pressure of about 100-lbs. per square inch. Experience and extensive tests have shown that the surface condition produced by moderate sandblasting has all the merits required to insure maximum paint adhesion.

Sandblasting cleans the metal and is an effective way to prepare metal surfaces to receive a priming coat. Metal surfaces prepared this way will allow the use of either oil or pyroxylin primer. In operation, I have found that we get good results from sandblasting by holding the nozzle about 6-in. from the work, and at the angle of 45°. However in this, as in other operations, the best results are obtained by employing only experienced help.—GEO. MOSKOS.

Comments by E. S. Harvey follow:

As you state, friction is a very material item of loss of actual working air, especially if the line has more than a reasonable number of Ls or other fittings—and irrespective of length of line when you speak of mill or shop lines, cold weather is something to be considered also, as air lines will freeze at a degree of temperature that will not affect water, as you know.

In other words, irrespective of the size of the hose to the sandblast nozzle, or paint spray nozzle as well, the "main air line" should be sufficiently larger that friction would not be a factor in actual tool operation — rather a loss comparable to that of air compressor capacity.

As far as the operator holding the nozzle a certain distance from his work, this is more or less a matter of experience, as operators may move the nozzle at different speeds, dependent upon the type of work and the abrasive used.

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In the way of abrasives, I would base this feature on the general principle of any cutting wheel, that is: Soft for hard metals and hard for soft metals—and very often experience has shown that a sharp river sand will give results out of all proportion to the more expensive silica sands, which will again vary according to analysis. In other words, I feel that as a last analysis, the sellers of abrasive materials should be called upon to give the benefit of their experience when requested and let results prove up, rather than attempt to make a broad recommendation, as market sources and delivery points may be a deciding factor. The question of reclaiming the abrasive after an operation is a matter for consideration also.

Naturally to hold the sandblast nozzle to a straight line on the work would cause a rebound, even though it would insure a harder cut, but again the factor arises as to the efficiency of the exhausting equipment to handle the abrasive which might permit of a different angle, as against a booth or bench that is not so efficiently equipped.

Finishing Things

Finishing things is to me a hobby,
I enjoy spreading lacquer or varnish.
Hardly a thing escapes my eye,
I cover all things that tarnish.

Paints, enamels, glossy or flat,
In colors that make you dizzy.
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—JOHN R. RITCHIE.

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Letters from I. F. Readers

(Continued from page 7)

us a free copy of your latest issue which, if found to our satisfaction, will be followed by a year's subscription. Please give us addresses of firms who can supply cheap quality lacquers for our wooden radio and gramophone cabinets. — Parakh & Sons, 483 Kalbadevi Road, Bombay, INDIA.

Rubbing Machine

Please advise us where an electric rubbing machine may be obtained.—S. S. Varnish Co.

To Bleach Birch

Do you know of any treatment for small birch wood turnings that will bleach them white? If you have heard of any such method we would appreciate your giving us the information.—I. V. O. & Co. (Hair Ornaments, Novelties).

Marbleizing Steel

We are interested in the article about "Graining and Marbleizing Steel Burial Vaults," as published in August, 1934, INDUSTRIAL FINISHING. We would greatly appreciate any additional information that you may have, or can you refer us to someone on the subject of graining or marbleizing metal?—T. T. Vault Co.

Pyrolene Wood Top

Several of our customers are calling for a pyrolene-effect wood top. We are interested in learning whether or not there is a material on the market which is sprayed and which gives the same appearance as pyrolene? We also would like to learn the source of supply for the regular pyrolene that is used on the tops of hampers and small tables used in bath rooms.—C. C. Co. (Baskets for Every Purpose).

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Books on Finishing

One of our customers in the wood-finishing industry is anxious to obtain a text book on finishing systems, including information on tinting enamels, etc. Will you please advise of any publications which you believe will fulfill requirements and, if possible, send a descriptive leaflet. —T. W. Works.

Put in a Water Booth!

Our attention has been called to the article in November issue, page 37, on "Waste Spray Collection" by Mr. M. M. Miller.

Mr. Miller's difficulty could have been readily solved by the installation of a water wash spray booth. While it is probably too late now to remind him of this equipment, it might not be inadvisable to drop him a note to the effect that had he called upon one of the reputable spray-painting equipment manufacturers they probably would have been difficulty.—B. C. Gardner, The De Vilbiss Co.

Back to Natural Finishes

Some of the furniture I see these days, together with the newspaper and magazine articles about finishing or refinishing furniture and cabinet work, make me sick. It is seemingly only a question of spreading it on. From a commercial standpoint this is of course appropos; but why cannot some of us come back to the good old natural wood and a more or less natural way of handling it?

I have several pieces of hand-made furniture finished with nothing more than boiled oil and turpentine, with, of course, the requisite amount of elbow grease. No stain of any kind is involved for the very simple reason that most woods take on a natural and beautiful tone with age and the necessary cleaning. A little wax, of the right kind, added after the oil finishing is completed, furnished all of the depth and luster that could be required, if such is desirable.

The pieces of furniture mentioned are made from white pine, mahogany of the plain variety, white oak and walnut. They stand scratching, knawing by my dogs and rain beating in from the open windows, without damage that cannot be easily

and quickly remedied. On the other hand I have furniture finished with the latest in lacquers and varnish, including phenol lacquers and at times they are a pain in the neck . . . J. E. R.

More Stick Shellac Cards

We notice in your November issue, you have a letter received from the Universal Stick Shellac Co. in regard to color cards on this product, and feel that we should also be given some consideration in your next issue. We therefore ask that you publish our willingness to supply users of stick shellac our own color cards on our Star Sticks Shellac and Star Lac Sticks.—Star Chemical Co., Chicago, Ill.

What Research Does

Five practical ways in which any research department should be able to justify itself were recently stated by Dr. Foster D. Snell. They are:

1) Reduced cost of product to consumer.
2) Increased margin of profit to manufacturer.
3) Increased appeal to consumer.
4) Increased field for utilization of product.
5) Increased business through introduction of profitable new products.

This analysis was part of Doctor Snell's address on "The Advantages of Close Cooperation between the Research and Sales Departments," which he delivered to the annual meeting of a manufacturers' association.

Booklet on Bakelite Resins

A new booklet, "Integrity of Finishes," recently published by Bakelite Corporation, Bound Brook, N. J., emphasizes particularly certain qualities and characteristics of Bakelite Synthetic Resins which impart integrity to a paint product—resistance to sunlight and weathering, moisture resistance, chemical resistance, elasticity and its retention and toughness. The booklet attempts to apply these factors of integrity to house paints, marine finishes, railway coatings, floor varnishes, furniture varnishes, anti-corrosive primers and finishing coats, and industrial baking finishes. It contains 16 pages, 6x9-in., between heavy paper covers, and has many attractive illustrations.

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EDITORIAL

Latest Fashion Colors

The first cards of new colors for the spring season were recently issued by the Textile Color Card Association of the United States. Pastel colors represent a significant new movement. The color organization called particular attention to their fashion importance when accented with darker tones, such as light browns with pink and the new rendition of navy with paler blues.

Important new colors are Maris blue, a deep turquoise; Acid green, a yellowish tone of the sulpher type; Coral Mist, of creamy yellowish undertone; Cameo Rose, a true flower pink; Crystal green; Wheat Gold. In the "fruit" motif, a new Creamy Peach tone, and a cool Citron yellow. The latest development in off-white is a rich creamy tint called Cameo White, which is expected to have high fashion prestige as a supplement to pure white, and is especially effective in combination with one of the new browns or Navy blue.

In the basic colors, considerable merchandising importance is accorded new interpretations of blue in navy, as Concord blue, a clear purplish navy; and Dawn blue, a medium grayed tone. Toffee brown, a rich candy shade and Java tan, a dark neutral beige, are among these shades.

Rust themes will be popular, and among these are Copper Tint, Indian Clay, Berry Rose, a smart raspberry tone; also Petunia purple, Nomad green, a dark clear green of yellowish cast; and Seagull, a light neutral gray. There is a strong indorsement given to greens for spring, and bluish greens of Chinese persuasion are also included.

There is a new peacock blue called Chinese Peacock; an intense sapphire hue called Talisman blue; a strong bluish pink of the geranium type; a virile Erin type of green called Limerick; a bright golden yellow, Canton Gold; and a new rendition of bluish red called Cocarde.

A novel feature for the spring color range is found in new groupings of light and darker harmonizing tones, suggesting companion shades. This arrangement highlights greenish turquoise with peacock green, light and dark

raspberry, dusty mauvish rose and mulberry, violet with clear bluish purple, and a light pinkish terra cotta shade allied with a new rust.

Markets for Durable Goods Point to Prosperity

The waiting markets or pent-up needs for what we term "durable goods" in this country are estimated to total up to more than 40 billions of dollars, according to B. C. Forbes in his twice-a-month business magazine. The grand total is added up from an itemized list based upon recent surveys which are considered to be fairly accurate and conservative.

The last two issues of Forbes magazine contain feature articles which reveal some amazing facts and figures upon the tremendous possibilities now open to manufacturers of building materials, transportation equipment, paints and finishing materials, machinery, modern household utilities, etc. In his December 1 issue, Mr. Forbes says:

"The prospect is, now that Washington and industry have pledged themselves to work hand in hand, that placing of orders will begin forthwith.

"This writer sees possibilities of a veritable boom in heavy industries involving scarcity, clamor for prompt deliveries, rising raw-material costs and soaring prices."

In this same issue a page headed "Durable-Prosperity Roll of Honor," carries the names of 33 firms (some of them advertisers in INDUSTRIAL FINISHING) which have recently spent or are now spending sums ranging from a few hundred thousand to several millions of dollars for such things as new machinery, equipment, plant improvements or plant additions.

Business writers and editors other than Mr. Forbes are manifesting timely optimism about the near future of business prosperity and industrial production in the United States. On the whole, confidence in the future has become more real and more widespread among people throughout the country. As a result, we see more money being spent, more investments being made and more substantial plans for heavy expenditures being pushed by private enterprises. There is something really hopeful to look forward to for 1935.

Product Development

New industries, new processes and new uses for present products —these, according to a well known business leader, are the cures for many present day industrial ills. An increasing number of manufacturers are turning to product development or product improvement as a means of stimulating sales and enlarging profits. Product development today is concerned not only with mechanical excellence, but also with potential markets, attractive design, durable and decorative finishes, and with qualities in the product that will meet the desires of consumers.

Sales or service men are found to be a fertile source of ideas for new products, probably because of their close contact with users. Other companies obtain suggestions from general employes which have been found useful in developing new ideas. A prominent manufacturer of automobiles goes direct to the consumer, on the theory that "there is only one person qualified to say just

what the motorist prefers and that person is the motorist himself."

In the selection of ideas for development, many companies give attention to such considerations as: 1) whether the product is suitable for marketing to established sales outlets, 2) whether it can be fabricated with existing plant and equipment, 3) whether it will overcome seasonal dullness, 4) whether the potential market is worth cultivating.

Research and development work in a number of large companies is usually under the direction of an officer, often ranking with the executive in charge of production and sales. The use of a technical research organization consisting of chemists and engineers is quite common in the larger organizations.

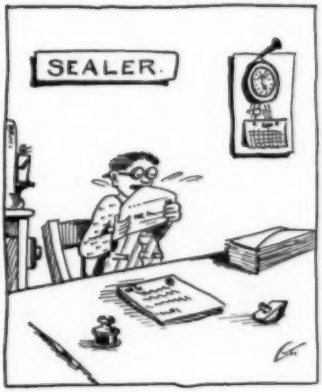
Repairing Damaged Places In Finished Surfaces

I HAVE BEEN asked at various times what to do with an enameled or varnished or lacquered surface that has been marred. A superficial scratch on an enameled or varnished surface may be rubbed out with pumice or rottenstone, moistening it during the operation with either oil or water. On a lacquered surface, a small scratch can be rubbed out the same way, but a good rubbing and polishing compound is better; sometimes a piece of crocus (polishing) cloth will serve the purpose.

If the scratch or dent goes into the wood or metal so deep that it can't be touched up without showing, the hole may be filled by burning in shellac or filling it with plastic wood or a little putty. I find that a quick-drying putty works well. Sometimes I mix a little powdered chalk with lacquer (either clear or colored) making it as nearly as possible the same color as the surface to be patched, and then fill the hole with this. Here is where a very fine grade of sandpaper, say No. 3/0, or a piece of crocus cloth will come in handy.

Be sure the filler is thoroughly dry clear down to the bottom before sanding the surface. It may shrink a little in drying; if it does, glaze over it with more putty or repair plastic. When dry, sand the surface smooth and then go over the top with a thin coat of lacquer or shellac. Thin the lacquer or shellac about 50/50, and pour some into a clean dish or pan so you can dip into it with a small cheesecloth pad. Dip your pad into this solution and give the repaired place a quick swipe. This is really better than brushing the finish on. This method is for small spots only.

After the spot is smooth and



flush with the remainder of the surface, the coloring may be applied. This can be done in most cases with a fine camel-hair or fitch brush, say about ¼ or ½-in. wide. However, this is up to the operator as every job is handled differently. Be sure to avoid getting a heavy edge around the spot. For touching up, blend the repair finish into a feather edge all around. This will enable you to make a smoother job when rubbing it with pumice, rottenstone, or rubbing compound. When rubbing over a patch it is well to extend your rubbing over the original surface to give it uniformity of appearance.

In reference to repairs do not forget that "an ounce of prevention is worth a pound of cure." After a new piece of work is finished and dry enough to pack, then see that it is packed properly and carefully. Use clean soft packing material that is free from any injurious substances. After a finished article is packed it should be handled carefully in transit. When you are forced to place one piece upon or close to another, put suitable padding between them. When finished articles reach their destination, it is advisable to look over the load to see how it was packed, and then try to unpack it along the same lines.

One customer, to whom I delivered a job, tried to burn off the binding twine with a match. Such thoughtlessness as this may not only set the wrapper on fire and scorch the finish, but it may start a bad fire. Always bear in mind that "a careless second" may cost several hours of work later in doing the job over.—FRED MANNHARDT.

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